

CLAIMS

1. A microfluidic device comprising a microchannel (2, 4), providing for liquid contact between an open microarea (MA) or chamber suitable for carrying a microvolume (1) of a solvent and a reservoir (3; 8) for the solvent, said reservoir (3; 8) and said microchannel (2, 4) being adapted so that solvent evaporated from said microarea (MA) is able to be continuously replaced by solvent from the reservoir (3; 8) through said microchannel (2, 4).
2. The microfluidic device according to claim 1 wherein
- a) said reservoir (3; 8) is positioned so as to create an overpressure in the solvent which is in equilibrium with the interfacial pressure difference across the curved surface of the droplet, or
 - b) said reservoir (3; 8) is connected to pump means that either facilitate replacement of solvent by pumping solvent or pressurising the reservoir (3; 8).
3. The microfluidic device according to anyone of claims 1-2 comprising a plurality of microchannels (3; 8) and open chambers forming an array in the circular or rectangular format.
4. The microfluidic device according to anyone of claims 1-3, wherein the microvolume contains one or more reactants that are soluble in the solvent or bound to a solid support in contact with the microvolume.
5. The microfluidic device according to claim 4 wherein at least one of said one or more reactants is an affinity reactant, for instance selected from nucleic acids, peptides, proteins.
6. A method for replacing solvents evaporating from a microvolume of solvent placed in an open microarea (MA) of a microfluidic device, characterised in that that replacement is continuously taking place via a microchannel (2, 4) that transports liquid to the microarea (MA) from a liquid reservoir (vessel) (3; 8).

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7. The method of claim 6, characterised in that the microarea (MA), microchannel (2, 4) and reservoir are parts of the microfluid device defined in claims 1-5.

8. Method for replacing solvents for preventing samples from becoming desiccated characterised in that it comprises the following steps:

providing a microarea (MA) for receiving a sample;

connecting the microarea (MA) to a reservoir (3; 8) of solvent by a microchannel (2, 4);

applying the sample to the microarea (MA);

allowing solvent to evaporate from said microarea (MA); and

continuously replacing said evaporated solvent with solvent from said reservoir (3; 8).

9. Method in accordance with claim 8 characterised in that it comprises the

additional step of:

anchoring the sample to the microarea (MA).